THE

VETERINARY JOURNAL

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NOVEMBER, 1929.

Editorial

VETERINARY EDUCATION.

THE year 1929 will always be an eventful one for the British Veterinary profession, as in its last quarter official steps have been taken, which, if finally approved and carried out, will advance veterinary science enormously and do much to raise it to the social standard which it should automatically and deservedly occupy in the scientific world.

It is particularly to the student to whom the benefit is to be applied, as, if the recommendations of the Report of the Departmental Committee on the Reconstruction of the Royal Veterinary College are adopted, the modern veterinary student will have an Alma Mater to look back upon of which he will be proud ; and those who have worked in, and graduated from, well equipped and well organised surroundings know full well their advantage as compared with " makeshift " places and ill-supplied wants.

The Government Departmental Report has now been issued and on other pages of this issue of the VETERINARY JOURNAL we publish the most important abstracts, to which we invite the careful attention of our readers.

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The present state of the buildings is, as stated in Lord Lovatt s Report, and reiterated in that of this present Departmental Committee, a " national disgrace." It positively cannot be allowed to go on. It has been neglected too long already, and one hopes most fervently that some substantial start will be made before the forthcoming International Congress, so that we may then at any rate show proof that remedial measures are at last being taken to make amends for past neglect.

The addition of another year to the College Curriculum is a necessity which one would like to have avoided on the ground of the additional expense it means to the student, but it is unavoidable if the prescribed subjects are to be taught, and digested, thoroughly and efficiently. The actual details of the scheme are not yet for publication, as the matter has not finally received the sanction of the Council, but their necessity is obvious, not only to the graduate but to the student himself, who knows full well the scramble it is to attempt to conscientiously study everything on the present Syllabus within the prescribed four years.

Both Schemes are of the right kind to help forward our profession scientifically and socially, and the sooner they each come into operation the better for everybody concerned.

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General Articles

ABSTRACT FROM THE REPORT OF THE DEPARTMENTAL COMMITTEE ON THE RECONSTRUCTION OF THE ROYAL VETERINARY COLLEGE.*

Minute of Appointment.

I HEREBY appoint the following to be a Committee to consider and report generally on the reconstruction of the Royal Veterinary College and the probable cost; and in particular on the questions what accommodation should be provided, having regard to the training to be given; whether that accommodation can and should be provided on the present site; if not, where the College should be transferred; and what arrangements should be made in respect of the Animal Pathology Research Institute now situated at the College, if it appears necessary to change the existing arrangements:—

Dr. O. CHARNOCK BRADLEY, M.D., D.Sc., M.R.C.V.S.
Lt.-Col. Sir MERRIK R. BURRELL, Bart., C.B.E.
H. E. DALE, Esq., C.B.
Sir W. M. FLETCHER, C.B., K.B.E., Sc.D., F.R.S.
Sir J. R. JACKSON, M.R.C.V.S.
Professor J. SHARE JONES, D.V.Sc., M.Sc., F.R.C.V.S.
Sir C. J. MARTIN, C.M.G., M.B., D.Sc., F.R.S., F.R.C.P.
Sir E. COOPER PERRY, M.D., F.R.C.P.
Major-General H. T. SAWYER, C.B., D.S.O.
Lt.-Col. Sir ARCHIBALD WEIGALL, K.C.M.G.

I appoint Sir C. J. MARTIN to be Chairman, and Dr. V. E. WILKINS, of the Ministry of Agriculture and Fisheries, to be Secretary.

(Signed) WALTER GUINNESS,
Minister of Agriculture and Fisheries.

30th July, 1928.

Abstract from the Report.

The terms of reference were interpreted as relating not merely to the Royal Veterinary College and the Animal Pathology Research

* The Complete Report can be obtained from H.M. STATIONERY OFFICE at the following addresses: Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegall Square West, Belfast; or through any Bookseller. Price, 1s. 3d. net

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Institute as buildings, but as bodies with traditions and aims, and in pursuance of this interpretation, in addition to dealing with the question of physical reconstruction, suggestions were made regarding constitution and government.

Evidence has been taken from the following witnesses :—

Dr. W. H. Andrews, D.Sc., M.R.C.V.S., Director of the Veterinary Laboratory of the Ministry of Agriculture and Fisheries.
Professor G. W. Clough, D.Sc., Royal Veterinary College.
Professor F. T. G. Hobday, C.M.G., F.R.C.V.S., F.R.S.E., Principal of the Royal Veterinary College.
Sir John McFadyean, M.B., B.Sc., M.R.C.V.S., late Principal of the Royal Veterinary College.
Dr. F. C. Minett, D.Sc., M.R.C.V.S., Director of Research, Research Institute in Animal Pathology, Royal Veterinary College.
Major-General Sir John Moore, K.C.M.G., C.B., F.R.C.V.S.
Mr. T. C. Wight, Secretary, Royal Veterinary College.

It is unnecessary to emphasise the deplorable condition to which the College has been reduced both as regards buildings and finance. The matter has been dealt with in the recent report of the Committee on the Colonial Veterinary Service, of which a pertinent extract is attached (Appendix A). That Committee visited the College in order to verify the disturbing evidence they had received concerning it. They report : " We do not hesitate to say that we were dismayed by what we saw." The facts, moreover, are well known to the Ministry of Agriculture and Fisheries. Suffice it to say, therefore, that with the exception of one building which is of fairly recent date, the College is in a state of dilapidation and the work is being carried on under conditions which are a national disgrace. As regards finance the end of the current year will find the College devoid of all reserves, with its prospective income insufficient to cover essential expenditure. The Governing Body have only been able to accept students for the coming session on a semi-official statement by the Ministry that, even if the College had to close its doors, the Government would be unlikely to refuse the financial assistance necessary to enable the Governors to discharge their obligations towards students who had been accepted for training.

So long as the students were passing examinations and Camden Town was recognised as one of the important centres of veterinary education, it was assumed that all was well. Actually, however, the process of degeneration had set in years ago, and the ideals of scientfic

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attainment desirable for a veterinary surgeon, and the status of the veterinary profession, cannot fail to have suffered by the lack of proper educational facilities and the unworthy conditions by which the students were surrounded.

A possible way out was offered after the War, when the Ministry made a definite suggestion to the Governors for the transference of the College to Cambridge. For reasons which on consideration we are bound to say appear to us to have been adequate, the Governors could not see their way to accept the suggestion.

When the College was founded in 1791 the veterinarian was a horse-leech. As knowledge of the nature and causes of disease grew his sphere of usefulness was correspondingly enlarged, and at the same time his educational requirements became more extensive and costly. Of late years, the enlistment of veterinary science into the service of the State has occurred more and more generally, and the interests of stock-raising, dairying and the public health now absorb a considerable proportion of the profession. This tendency will continue in an increasing degree in every civilised State. The equipment and staffing of a modern veterinary college must provide not only for the supply of general veterinary practitioners, but for the demands of the State and public authorities.

Subject to the above conditions our preliminary deliberations were designed to answer the following questions :—

(*a*) What training should the College provide ?
(*b*) For how many students should provision be made ?
(*c*) Is a rural site or a town site preferable ?

The Training to be Given.

As some prominence has been given to the suggestion that it would be in the ultimate interests of the veterinary profession if the first year's studies were taken before the students entered the College for the more strictly " professional " part of the course, we investigated this point and took evidence upon it. At present, the R.C.V.S. regulations would prevent it, but even assuming they were amended to make the proposal practicable, we doubt its desirability. It is unlikely that the arrangement would lead in practice to much intermingling between veterinary students and those of other faculties ; the veterinary classes would probably be under separate teachers, and opportunities for association with other students would be few. On the other hand, by taking their first year's course outside the veterinary college, the students would be deprived of the benefit of that early contact with the College teachers, and with the general atmosphere of veterinary work, which is often helpful in stimulating their interest

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in the profession they are proposing to enter. From the financial standpoint, little would be gained. There might be a small saving in the capital cost of the new building if provision had not to be made for teaching the preliminary sciences, but as regards maintenance the "farming out" of such teaching to another institution would probably be uneconomical. It is recommended later that the department presided over by the professor of chemistry should also be responsible for toxicology, and that directed by the professor of biology for protozoology and entomology, an arrangement making for unity between the teaching of these preliminary sciences and their extension and application to the more professional subjects of the curriculum. Further, we are convinced that collegiate association with a chemist and a biologist is of very great value to colleagues who are engaged in teaching and research in the departments of physiology, pathology, bacteriology and epizootiology.

We are, therefore, of the opinion that the Royal Veterinary College should continue to make provision for the teaching of the first year's subjects.

Views have been placed before us to the effect that greater attention should be paid to the subjects of animal husbandry, the principles of genetics and the hygiene of milk and meat ; and we notice also that the Colonial Services Committee emphasises the need for a sound working knowledge of animal genetics and nutrition as a part of the qualifications required by the Colonial veterinary service. So far as we are concerned as a Committee, we have confined ourselves to making provision for any necessary strengthening of the existing curriculum, in the proposals for building and staffing which we submit later in this report. If these proposals are adopted, they would enable the College to provide training adequate to the needs of veterinary science in this country. Moreover, by including reasonably generous research facilities and an adequate and qualified teaching staff, they would meet any likely demands for post-graduate and "refresher" courses for home veterinary surgeons ; and—a point to which we attach great importance —would place the College in a position to offer the post-graduate courses suggested by the Colonial Services Committee as being essential to the proper training of veterinary surgeons for work in the Colonies.

On the basis of the above considerations, we have come to the conclusion that the College should make provision for the following nine departments :—

Surgery and obstetrics ;
Medicine ;

Animal husbandry, zootechnics, hygiene and State medicine and the production of meat and milk ;
Pathology, with bacteriology and animal parasitology ;
Pharmacology and therapeutics ;
Physiology with animal nutrition and bio-chemistry ;
Anatomy, surgical and applied anatomy, histology and embryology ;
Biology, protozoology, entomology and genetics ;
Chemistry with toxicology and elementary physics.

Each department should be in the charge of a whole-time professor, with at least one whole-time senior assistant. There should be adequate facilities for research and post-graduate work, and rooms for extra lecturers and research workers should be provided.

Number of Students to be Provided for.

The number of students in training at the Royal Veterinary College during the past few years has ranged from 128 in 1924-25 to 157 (including 17 women students) during last session. The total entry at the remaining three veterinary colleges in Great Britain, viz. Edinburgh, Glasgow and Liverpool, amounted last session to 216. We are informed that these numbers are insufficient to provide the required recruits into the ranks of the veterinary profession under present conditions.

It is necessary also to bear in mind the probable demands in the future. We have considered this matter, and are of opinion that the demand for veterinary surgeons in this country will expand. Every year the importance of the preventive side of veterinary medicine is coming into greater prominence, and the number of veterinary surgeons required to fill public appointments increases. Further, the agriculturist is becoming more appreciative of the value of the veterinary surgeon's assistance, not only in combating epizootic diseases, but in solving economic problems associated with the yield of meat and milk.

We are of opinion that in planning the new veterinary college provision should be made for an annual entry of 75 students, with total accommodation for 250. This assumes that of the students entering the college, only about 80 per cent. will proceed beyond the first year—an assumption based on actual experience in the past. In providing for a total of 250 students (men and women) we have assumed that entries to other veterinary colleges will also increase, and that it is not the policy of the Royal Veterinary College to attract students who might otherwise have gone to Edinburgh, Glasgow, or Liverpool.

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The Site.

We turn now to the vexed question of the location of the College. There have, we are informed, been differences of opinion on this point, and unfortunately the feeling has arisen that the decision of the Governing Body not to transfer to Cambridge, mentioned above, was influenced to some extent by personal considerations, and the desire to preserve the individuality and independence of the College. We would like to make clear, therefore, that the conclusion to which we have come, which supports entirely the view previously taken by the Governors, has been arrived at solely from consideration of the interests of veterinary education, and after taking account of every aspect of a rather difficult problem.

In the first place it is significant that the most successful veterinary colleges have been situated in the vicinity of cities. Utrecht, Leipsig, Vienna, Alfort, Milan, Riga, Stockholm, are a few of the leading veterinary institutions of Europe; in all cases they are situated in great centres of population. The reasons are not far to seek. First, it is vital to a sound training in medicine, whether human or animal, that ample facilities should be available for the demonstration of actual sickness and disease. In medicine, this is secured through the hospitals; in veterinary science, through the clinic which must always be associated with the veterinary college. It is of the utmost importance that a ready flow of sick animals should be passing continually through the clinic, and this can obviously only be secured in a thickly populated district. Second, the city has advantages from the standpoint of accessibility to students, and—more important still—makes possible the intermingling of teachers and students of various faculties, and so obviates the very real dangers of intellectual isolation.

It is true that the city veterinary clinic is largely composed of horses, dogs and cats, and that from the agricultural standpoint it would be better if farm animals were the rule rather than the exception; but this seems to be a drawback which is insuperable. A veterinary college in the country would lose almost completely this invaluable connection, and it is more than doubtful if farm animals in any numbers would be forthcoming to fill the gap.

It has been urged that the veterinary surgeon's training ought to contain more provision than it does for acquainting students with first hand knowledge of the farm animal in health, and this view has been put forward in support of the contention that a rural site, with a farm attached, is desirable, or at least that the college, if situated in a city, should have a farm on the outskirts to which students could be taken to gain acquaintance with animal husbandry as part of their course of study. We agree that the more the veterinary surgeon knows

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about the healthy animal the better qualified will he be to treat the sick one, and that if in his already crowded course it is possible to increase the provision for imparting practical knowledge of stock management it would be all to the good; but we hardly think it necessary that the College should own a farm for the purpose. Experience on a farm and subsequent residence with a veterinary surgeon during vacations would give the student a good deal of insight into the practical conditions of stock management, and during terms it should be possible to make arrangements for instructional visits to one or other of the educational farms which are now established in all parts of the country.

We feel, therefore, that the weight of evidence is in favour of an urban site, and having come to that conclusion, the next point to establish is where the site should be. Before discussing that subject, however, it is necessary to consider another important question that has arisen, namely, that of the desirability or otherwise of affiliation with a University.

University Affiliation.

The Royal Veterinary College at present has on its staff teachers who are " recognised " by the University of London for the purpose of the instruction requisite for the internal degree of B.Sc., in Veterinary Science. That degree can, therefore, be taken from the College, and a small proportion of the College students are now studying for the University degree as well as for the diploma of the Royal College of Veterinary Surgeons. This constitutes, however, the sole link between the University and the College ; apart from it, the latter is an entirely independent body, pursuing its own course, and deriving no advantage from its close proximity to the greatest centre of learning in the Empire. The College students live either at home or in rooms in various parts of the metropolis ; there is little corporate life, and no opportunity for mingling with the great band of aspirants for University graduation who are destined to recruit the ranks of scientific workers at home and abroad.

From every point of view this is wrong. All branches of science have much in common, and the intermingling of students assists in creating the broader outlook and spirit of co-operative endeavour which contributes so largely to scientific progress. Moreover, the community life resulting from membership of a University is helpful to the students in their recreations and games, and encourages the true conception of citizenship which in their after career will be so great an asset. The isolated atmosphere in which the Royal Veterinary College has pursued its course in the past has been bad for the students and for the

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large section of the veterinary profession which they represent. We feel that the possibility of organic association with a University should be one of the factors governing a decision on the question of the future situation of the College.

Assuming that the College were accepted by the University as a school, it would have in the first place the advantage of University status both in relation to its educational work, by which students at the College could proceed to the University's internal degree without necessarily receiving all their instruction from Recognised Teachers, and on the social side in so far as the students would be able to avail themselves of such facilities for social intercourse as belong to the University as a corporate body. It would not follow that all students of the College would automatically become internal students of the University, as it is obvious that the University could only describe in this way those students who were taking the University degree; but under the new statutes the remaining students of the Royal Veterinary College, who at present form the large majority, would, as in the case of non-matriculated students of London medical schools, be "associate" students of the University, and would be eligible for all the privileges available for students of the University as a whole.

In our opinion London is in many ways admirably suited for the purposes of a veterinary college. There is, it is true, one important drawback, in the fact that it contains no agricultural college, and the association of veterinary science with agriculture is too clearly desirable to make it necessary for us to emphasise it in this report. On the other hand, a veterinary college in London can, with proper organisation, have the advantage of close touch with the medical and other science schools of the University, including the London School of Hygiene and Tropical Medicine with its Field Institute of Agricultural Parasitology —an important benefit, especially in relation to the requirements of the Colonial veterinary services. On the whole, therefore, and in view of the long association of the Royal Veterinary College with London, we are of the opinion that a transfer to another city would be inimical to its best interests.

The Camden Town Site.

There remains to be considered the question of the site. The present site at Camden Town is approximately 2½ acres in extent, and has been the home of the College since its foundation in 1791. The site is held on a 99 years' lease (from 1923) from the Ecclesiastical Commissioners, which provides that the premises are to be used only as a veterinary College.

It is admittedly not an ideal position for an educational institution. It is in a congested district; the noise of traffic is a hindrance to lecturing and research work, and the general outlook of the College is not inspiring to the students. There are, however, compensating advantages. The site is readily accessible from most parts of London. It is close to the Islington Cattle Market. The college is able to secure an abundance of the smaller animals for the clinic, and an appreciable number of horses. University College, the London School of Hygiene and Tropical Medicine, and the central University site at Bloomsbury, are in reasonable proximity. No other area of land of sufficient size is available in the neighbourhood, and after examining the possibilities of alternative positions with some thoroughness, we came to the conclusion that it would be a mistake to remove the College from Camden Town, unless it were found impossible to provide there all the requisite buildings and facilities for a well-equipped modern veterinary college on the lines which we have indicated above to be desirable.

The Research Institute.

The Animal Pathology Research Institute was erected in 1926 at a cost of about £33,000, towards which the Ministry paid a grant of £31,500. A maintenance grant of £5,000 per annum is forthcoming from the Development Fund. The Institute is governed by a Research Committee appointed by the Governors, consisting in part of members of the General Purposes Committee (the effective Governing Body of the College) and in part of members appointed from outside. The Committee has decided that the attention of the Institute should for the present be devoted to a study of the more important contagious diseases of cattle, such as epizootic abortion, Johne's disease and mastitis.

We consider that the grant of £5,000 per annum is insufficient for really effective work on animal diseases.

A more fundamental defect of the existing condition concerns the relationship between the Research Institute and the College. We deprecate the arrangement which appears to have obtained hitherto under which the Institute, although ultimately under the same Governing Body as the College, has carried out its work as a separate unit, to the mutual disadvantage of both. The closest relationship should exist between the two, not only by reason of the "inspiration" which research gives to teaching, but because a teacher is not likely to induce even the best type of student to consider the possibility of scientific investigation as a career unless he himself is actively engaged in research. Otherwise he fails to infect his students with enthusiasm to increase the bounds of knowledge, and as a consequence the next

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generation lacks capable investigators. If the Research Institute had not already been in existence, we would have recommended the erection of one building only for both College and Institute, so as to secure the fullest measure of contact between teaching and research. In the circumstances, the practical scheme open to us is to link up the College building physically with that of the Institute, and to use such influence as we may be able to exert through the medium of this report by emphasising the need for such internal organisation as shall ensure intimate co-operation between the work of the College and the Institute.

The present Director of the Institute is strongly in favour of moving it to a rural site, mainly in view of the difficulty of conducting investigations into the diseases of large animals in a congested urban centre. We appreciate the force of his arguments, but we think they are outweighed by two considerations : first, that it would be more effective and economical to strengthen the other research institutes in animal pathology than to build a new one ; second, that in the interests of veterinary education it is clearly desirable to retain the Research Institute in close contact with the College. At the same time, we agree that the Research Institute is cramped for space, and is in urgent need of land in the vicinity of London for the purposes of experimental work with farm animals. The provision of such a field station might also be made an asset to the College for the purpose of occasional demonstrations to the senior student and in other ways.

Rebuilding Proposals.

The schedule of accommodation which was submitted to the architects is printed as Appendix B to this Report. We would draw special attention to the fact that adequate provision is made for staffing and research facilities for each of the nine requisite departments of the College, on lines which would not only fulfil the conditions of a school of the University of London, but would also meet the requirements of the Colonial Veterinary Services as adumbrated in the proposals of the Colonial Veterinary Services Committee for the establishment of a School of Tropical Veterinary Medicine.

The existing site of $2\frac{1}{2}$ acres is more restricted than is desirable to allow for future extensions of the College, but an additional half-acre adjoining it on the north side could, we understand, be acquired.

After considering the matter fully, and preparing complete plans, the architects were able to satisfy the Committee that a college containing all the accommodation mentioned in the schedule could be erected on the existing site. The approximate cost would probably be in the neighbourhood of £280,000, although this figure would be slightly reduced if the buildings were erected on the smaller area. This estimate

includes fittings and equipment. The building scheme could be carried out over a period of, say, three years, without seriously interrupting the work of the College.

The total cost of the building scheme may be approximately estimated at £300,000. This scheme represents, in our opinion, the *minimum* provision which should be made for the building of a modern, suitably-equipped veterinary college at Camden Town.

Staffing and Maintenance.

If our proposals were put into effect in their entirety the total salary bill would be in the neighbourhood of £20,000 per annum, as against the present figure of £6,700. It has also to be remembered that at present the maintenance of the College is involving the Governors in a loss of approximately £3,000 per annum, and that the assets from which this loss has been met in past years are exhausted. The three figures of increase thus arrived at, namely, maintenance £5,000, salaries £13,000 and charge against deficit £3,000, together make a total of £21,000 per annum. In addition, provision will be required for research expenditure in each of the nine professional departments, including the cost of animals, apparatus, chemicals, &c. Each department would require from £500 a year upwards for this purpose, according to its activity.

The above estimates of cost relate only to the College and take no account of the Research Institute. In regard to the latter, we recommend (*a*) that the annual maintenance grant from the Ministry should be considerably increased ; (*b*) that a sum of £25,000 should be provided for the purchase and equipment of an area of land in the vicinity of London to enable the Institute to conduct under proper conditions experimental work with the larger animals.

(*To be continued.*)

LEAVES FROM A SUFFOLK PRACTITIONER'S DIARY.

By J. M. BUCHANAN, M.R.C.V.S.,
Stowmarket.

THESE random jottings from the notes of humdrum everyday events in the life of a country practitioner may be of sufficient interest to merit the passing notice of my colleagues. Suffolk being the " home of the pig " a good number of swine diseases come under observation.

At the moment of writing we are suffering here from a swine fever epidemic so severe that the Ministry of Agriculture has deemed it advisable to close all markets except for fat stock for immediate slaughter. A peculiar feature of the outbreak has been its virulence and the source of spread has been in many cases a mystery. No history

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of new purchases at market, drovers' visits, and the usual means of contagion has been usually elicited on inquiry.

Treatment by serum inoculation in some cases has been of doubtful benefit, whereas in others inoculation used in just as severe cases has acted like the proverbial charm.

The manufacturers of serum (and the writer has tried several brands) all advise daily or repeated injections, but the price is prohibitive. What we need is a more potent cure than that already in use.

As a preventive the double injection with serum and vaccine is highly successful.

Erysipelas has been very prevalent this year but, like the poor, it is always with us. Unfortunately, this year it has taken a different form of being a thorn in the flesh, viz. as a complication of the epidemic to which we have already referred. On one farm I inoculated over 200 store pigs following an outbreak diagnosed as erysipelas. A transitory improvement in the death rate took place, then swine fever broke out but after inoculation it too died down. A month after the premises were free of restriction more deaths occurred, two typical of erysipelas and three under the category of N.Y.D., so familiar in pig diseases. Swine fever and erysipelas have again broken out on these premises.

Contagious Abortion.

Contagious abortion is a common complaint in Suffolk. The usual remark made by a client is to refer to the difficulty of "getting the cow in calf again." A routine treatment which has given good results is (1) treat all cows holding the cleansing more than 24 hours as suspects and isolate until proved innocent ; (2) inject with sterile precautions Bacillus Bang live culture subcutaneously ; (3) test the passage before service for acidity of the vagina and correct by injection of a tepid solution of potassium bicarb. ; (4) isolate injected cows from other in calf cows for two months, i.e. at milking, grazing and feeding ; (5) serve at the end of the period. 75 per cent. of the results have been successful. Manipulation of the ovaries in the continual troublesome case gives moderate success.

Use of Pilocarpine.

A peculiar feature of the use of pilocarpine as a hypodermic injection for impaction in horses along with eserin has been a swelling at the site of injection. The syringe was sterilized by boiling, likewise the water for dissolving the pellets. A hard lump appeared on the neck a week after recovery from the colic. It is noteworthy that since leaving out the pilocarpine no repetition of the mishap has occurred.

These random jottings may be of sufficient interest to merit more than a passing glance. If they meet with such, any labour in their compilation will be well rewarded.

THE OPERATIVE TREATMENT OF TRAUMATIC INFLAMMATION OF THE NAVICULAR BURSA WITH PRESERVATION OF THE DEEP FLEXOR TENDON.*

By PROFESSOR GERHARD FORSSELL,
The Veterinary School, Stockholm.

(Concluded.)

Cases.

CASE 1. CAVALRY HORSE, GELDING, 6 YEARS. The patient sustained "a nail tread" fourteen days previously, and markedly lame bearing very little weight on the off-hind leg. There was some swelling in the hollow of the heel, and discoloured synovial fluid was escaping from the wound. There was no fever. The nail tract was opened up and the neighbouring soft tissues removed as far as the tendon. A curved canula was inserted into the bursa which was thus irrigated with a 2 per cent. solution of Arsenious Acid. Calcium Bicarbonate was used to bring the Arsenic into solution. The horse used the limb very little for several weeks after the operation, but gradually weight was put on the leg so that after six weeks the patient could be sent home in the ambulance. The horse was then shod. Exercise was commenced after three months; but when one month later lameness reappeared the coronet was blistered (Veterinary Officer Morell). After a further six weeks exercise was recommenced and two weeks later the patient started work free from lameness. He has worked since in all harness, and nine years after the operation was quite sound. There was no proliferation of scar tissue. In the hollow of the heel there was a slight tendon thickening.

CASE 2. OFFICER'S CHARGER, GELDING, 6 YEARS. A week previously the patient sustained a perforation of the navicular bursa of the off-hind limb. He was brought to the Veterinary School in the ambulance on December 27, 1912, showing great lameness, no weight being put on the limb. Temperature 38.8°C. A discoloured synovial discharge exuded from the wound. There was slight swelling in the hollow of the heel. The temperature rose to 39°C. the following day, whereupon the operation was immediately performed. In this case resection of the tissues in the immediate vicinity of the tract was practised, the bursa being irrigated with a 2 per cent. Arsenic Solution. A marked reaction occurred and no weight was borne on the limb for several weeks. Healing of the frog wound was complete in six weeks when a shoe was put on and the animal sent home by ambulance. Moderate

* Translated by Geoffrey Brooke, B.Sc., M.R.C.V.S., formerly Assistant in the Department of Surgery, Royal Veterinary College, London.

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weight was borne on the limb at this stage but lameness was distinct even at slow paces. Improvement occurred during the following weeks but when the high caulkins were removed at the end of three months, lameness increased again. The caulkins were accordingly replaced and the coronet blistered. After five months the horse was free from lameness at a slow pace ; he was sent to grass for the summer with a flat shoe applied ; in the autumn the patient had fully recovered and moved sound at all paces. Unfortunately a septic tarsitis necessitated destruction ten months later. There was no opportunity to make a *post-mortem* examination.

CASE 3. HEAVY ARDENNER*, 9 YEARS. Ten days prior to arrival the animal sustained a perforating " nail tread " in the off-fore foot. The nail had possibly remained *in situ* for twenty-four hours, and the lameness had increased markedly during the succeeding days. The nail had entered about the middle of the inner of the collateral sulci of the frog. The horn in the vicinity had been pared away and a serous, dirty discharge was escaping. A diffuse, non-fluctuating swelling the size of a plum was present in the hollow of the heel. The operation was performed the following day. The horn of the frog and neighbouring parts of the sole were removed in the usual manner. The probe showed the tract to lead directly down to the navicular bone. With a blunt bistoury an incision was made from the nail-tract backwards between the bulb of the heels, after which the exposed tendon was incised over the bone. The cartilage over its flexor surface was removed with a bent curette and the bursal cavity flushed with hydrogen peroxide followed by tincture of iodine and bandages applied. When the horse rose it was apparent that there was a radial paralysis affecting the operated limb, this being dragged along when the animal moved. Later the dressing was caught by the hind limb of the same side and completely ripped off, so that the soft tissues of the operation field came into contact with the straw. When this was observed the foot was cleansed and a new bandage applied ; considerable swelling followed, but healing proceeded satisfactorily. The radial paralysis improved after some days but the phalangeal joints were kept strongly flexed and the limb was not used. Thirty-six days after operation the wound had healed, and new horn covered the part. A leather sole and special shoe was applied, the latter designed to remedy the persistent flexion of the phalangeal joints. From the toe of the shoe a metal arm projected forwards and upwards, and from the summit of the arm four pieces of strong elastic ran back to encircle the limb above the fetlock. This system exerted a gently extending effect upon the phalangeal joints which gradually resumed their normal alignment. The patient

* This Belgian breed is the common heavy draught horse of Middle and Southern Sweden [TRANSLATOR].

then commenced to use the limb. Sixty days after operation the animal was discharged and whilst sound at the walk, he trotted lame. Four months after the operation the animal was worked on the land, and two months later according to the owner performed agricultural work well, but showed lameness if trotted on the hard road. One year after operation the horse could be used for town work and trotted sound in the streets. This case is remarkable as instancing the restoration of a heavy Ardenner to full usefulness ; whilst he was able to do useful work sufficient to defray the cost of keep.

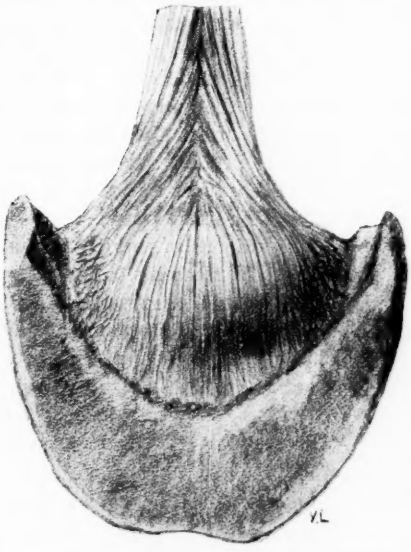

FIG. 1.—The insertion of the deep flexor tendon into the third phalanx and its lateral cartilages; note the spiral disposition of the tendon fibres. The distal sesamoid bone lies wholly within the semi-lunar line of insertion of the tendon.

CASE 4. DRAUGHT ARDENNER CROSS, 6 YEARS. This horse had been lame for a month before he was examined by District - Veterinary Surgeon Vanselin who sent him in for immediate operation. He showed marked lameness on arrival. In the inner collateral sulcus of the frog was an obvious penetrant tract emitting a scanty purulent discharge. The hollow of the heel was swollen, but not fluctuating. The temperature was normal. Operation with the same technique as in the previous case. The wound healed uneventfully. A shoe was applied after six weeks, and at the end of two months the animal walked sound. The patient remained in hospital for four months and then discharged, free from lameness, at all paces. No subsequent history is available. The length of the return journey demanded that the patient remain in the Clinic until the new tissue had assumed some degree of strength.

CASE 5. DRAUGHT ARDENNER, 13 YEARS. Perforation of the bursa had occurred one week previously. Treated by Mr. Hakansson, Veterinary Surgeon, with injections of Tinctura Iodi and aseptic

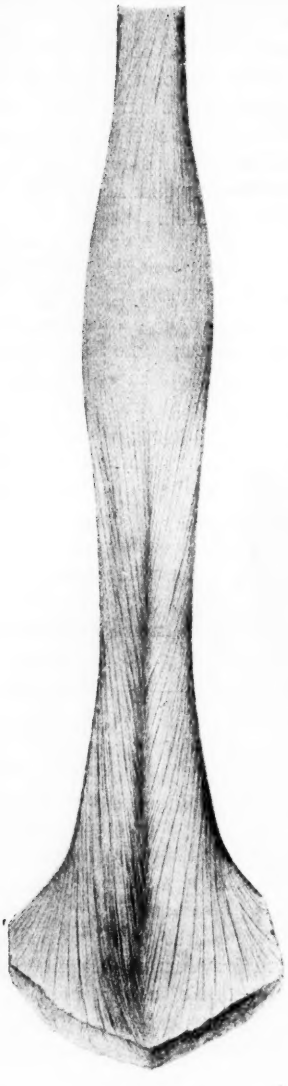

FIG. 2. — The deep flexor tendon from the level of the fetlock to its insertion. The superficial tissue has been removed to show: (a) the division of the lower part into two halves separated by a longitudinal furrow; (b) the more compact structure of the broad upper section apposed to the proximal sesamoid bones. Distal to this part the spiral formation of the fibres commences.

dressings. Fever (39.3°C.) was observed on the morning of arrival, and the horse, when examined, was very lame on the off-hind limb. The perforation lay in the outer collateral sulcus of the frog, but there was no discharge; the hollow of the heel was swollen. The following day the operation was carried out the usual technique being followed. Healing was uneventful for fourteen days, when an abscess appeared about the middle third of upper border of the outer cartilage of the third phalanx. Two days later an abscess opened at a corresponding site on the inner aspect of the limb. After being laid open to release thick glutinous pus which contained micrococci, some diploid and others in chains, the abscesses healed quickly with antiseptic irrigations. Six weeks after the operation he was examined when he trotted sound, and was shod with a flat shoe. Since then the patient has performed farm work.

CASE 6. HEAVY ARDENNER, 9 YEARS. The lameness when the horse was examined on the day of the accident was not marked. A punctured wound was located about the middle of the medial collateral sulcus of the frog. The usual treatment was given, i.e. local paring of horn, irrigation with Tinctura Iodi and bandaging. The lameness increased

during the next ten days, little weight being placed upon the limb. There was no fever, no discharge, and no swelling in the hollow of the heel. The dressing was renewed. Two days later a purulent discharge mixed with synovia appeared; the hollow of the heel commenced to fill; still there was no fever. A probe was passed along the tract after superficial paring of the horn of the sole and frog; no perforation of the tendon could be demonstrated. An incision was carried backwards for a distance of 3 cms. from the wound and medial to this, a mass of digital cushion 3 cms. long and 1 cm. broad was excised. A probe was now inserted and followed the tract towards the mid-line and thence through the tendon on to the navicular bone. The bursa was irrigated with hydrogen peroxide, later with iodine, a gauze drain

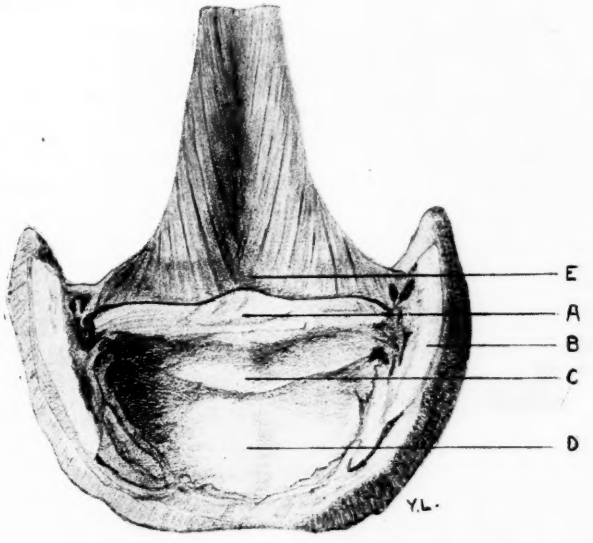

FIG. 3.—Shows the third phalanx D, distal sesamoid bone C, and the deep flexor tendon E, as viewed from above. The lateral cartilages are partially resected, their sectioned surfaces being indicated by B. A denotes the cut surface of the suspensory ligament of the sesamoid bone. Observe that the sesamoid bone is completely covered by the fan-like insertion of the deep flexor tendon.

was inserted and bandages applied. 100 ccs. anti-purpura hæmorrhagica serum (Jensen) were given intravenously and 150 ccs. intramuscularly. The dressings were renewed thrice in the succeeding fourteen days. Some suppuration was observed in the early stages, but later the field was quite dry, and additional 150 ccs. of the above serum were given intra-muscularly on the seventh day after the opera-

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tion. The lameness had not diminished perceptibly whereupon the radical operation was proceeded with. A similar technique to that employed in previous cases was employed except that the incision into the digital cushion was made in the mid-line. The cartilage was removed with the specially constructed curette. The lameness diminished rapidly and the wound healed uneventfully. The limb was being used at the end of two weeks and when four weeks had passed a shoe with high caulkins and a metal sole was put on. There was no excessive scar formation and the patient was discharged. At this stage he could walk sound, but was lame at the trot. After two months in a loose box followed by ten days light exercise there was still lameness at the trot. The animal was put to grass; after two months a renewal of the lameness was remarked. Examination showed some bruising of the frog which was projecting below the level of the shoe. The condition responded to treatment and the animal commenced slow road work in Stockholm and later was worked at all paces, being restored to full usefulness and quite free from lameness at the trot.

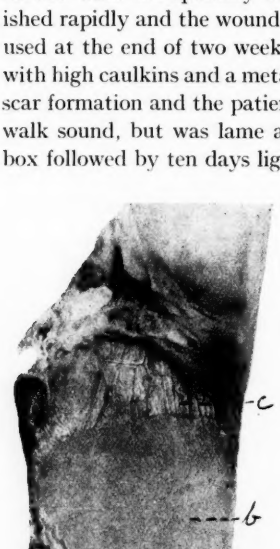

FIG. 4.—Photograph of one half of that part of the deep flexor tendon normally apposed to the distal sesamoid bone. The blood vessels injected with Berlin Blue, are not well defined on the photograph. (a) Part of the tendon distal to the sesamoid bone; (b) The area of the tendon normally in contact with the sesamoid bone; (c) The highly vascular part of the proximal cul-de-sac of the navicular bursa.

CASE 7. HALF-LEGGED HORSE, 7 YEARS. This horse was transferred from the Ambulatory Clinique, where a nail-perforation of the near-hind foot had been diagnosed. An abscess had opened in the hollow of the heel; the usual treatment together with the injection of 200 ccs. of "anti-wound infection serum" had been carried out. With no improvement in the lameness the case had been remitted to the Surgical Clinique. On examination the lameness was very marked; the coronet of the affected foot was diffusely swollen with a serous discharge from an opening on the lateral aspect just proximal to the coronary band. A diagnostic operation was performed the next day. After paring the horn, the frog was incised in the mid-line and with a probe the tract was followed through a perforation in the tendon; the

aperture was enlarged slightly and the bursa irrigated with hydrogen peroxide, drained and bandaged; after three weeks, with several changes of dressings both the coronary abscess and the operation wound had healed satisfactorily. The lameness had diminished slightly, suggesting that the distal interphalangeal joint was not implicated. A radical operation was undertaken with a similar technique to that employed in Case 6. Whilst curetting the cartilage several strong adhesions between the navicular bone and tendon were encountered. Improvement was seen after three days. And at the end of a week the animal could walk in the box without much disability. The bandage was changed on the twelfth day when the wound was healing by healthy granulation. A shoe with high caulkins and a sole were applied twenty-two days after the operation; at this stage the patient walked

FIG. 5.—Curette for the removal of the cartilage on flexor surface of the distal sesamoid bone.

sound but was slightly lame at the trot. He was discharged ten days later, and walked the return journey of ten kilometres. He was examined again after a further two months, during which time he had worked but had shown some lameness with heavy loads. When seen he was sound both at the walk and the trot; the transient lameness remarked by the owner appeared to have been due to that no new shoes had been fitted since the horse left the College and the toes were

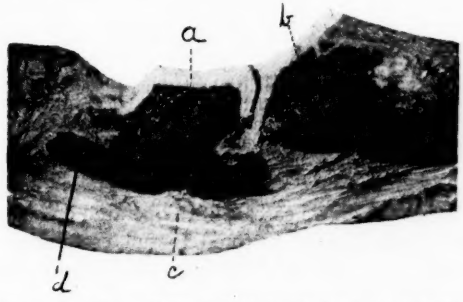

FIG. 6.—Sagittal section through the distal interphalangeal joint with spontaneous obliteration of the navicular bursa after traumatic perforation (case reported by Hederstedt). (a) sesamoid bone; (b) third phalanx; (c) tissue binding the deep flexor tendon to the sesamoid bone; (d) new bony tissue. The horse moved without the slightest lameness.

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overgrown. Subsequently the horse performed work at a fast pace for seven years without any lameness whatever.

CASE 8. BIG ARDENNER, 8 YEARS. This horse had sustained a nail prick in the near hind hoof, and no weight was being placed on the limb. An exploratory operation with enlargement of the tract demonstrated a bursal perforation and the radical operation with a mid-line incision was carried out, when the bone was found to be devoid of cartilage. The bursa was irrigated and drained. A streptococcal pus was present when the bandages were changed on the third day and no weight was being put on the limb. Three weeks after the operation the animal commenced to use the leg. On the twenty-second day there was a sudden relapse with an exacerbation of the lameness. This was due to pus-retention and responded to appropriate treatment. He was shod on the thirty-seventh day succeeding the operation and five days later was sound at the walk and was discharged. The patient was seen, by request, one year after the accident. At first he had been spared and put to grass but more recently had done several months work. There was neither lameness nor reaction to the "flexion test."*

FIG. 7.—Sagittal section through the distal interphalangeal joint after the operation described in this article. (a) distal sesamoid bone; (b) part of the deep flexor tendon running to its insertion into the third phalanx. Lameness reappeared after the animal had returned to work for four months. The cause would appear to be the exterior bony enlargement over the posterior face of the sesamoid bone which caused pressure upon the tendon and digital cushion.

In addition to the above cases I have operated on some ten others the majority of which were restored to full usefulness. Some less favourable or definitely unsuccessful cases remain for discussion. One horse became lame after working for three or four months, and never recovered. On *post-mortem* the navicular bone was found to be grossly

* In Stockholm this test is a routine measure in the investigation of lameness; it is designed to show the effect on a given lameness, of sustained flexion of a joint or series of joints.

enlarged from ostitic changes and constituted an obvious cause of the disability. In one case necrosis of the tendon led to its rupture immediately behind the navicular bone. In two remaining cases the distal interphalangeal joint shared in the septic process and in one of these infection of the digital sheath supervened.

To those who would employ this method, early surgical intervention is urged; for whilst one waits a long time for results there is every hope of a complete elimination of lameness. Moreover, the light work which the subject can undertake a few months after the operation, helps to defray the cost and makes the procedure an economical proposition.

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The nomenclature adopted by Sisson in "The Anatomy of the Domestic Animals" (W. B. Saunders & Co., Philadelphia) has been used throughout the translation Owing to the multiplicity of veterinary anatomical terms at present in use, the following list of synonyms has been appended.—[TRANSLATOR.]

1.	(a) Cartilages of the third phalanx (CARTILAGINES PHALANGIS TERTIAE)	Sx
	(b) Lateral cartilages of the foot	McFxx
2.	(a) Collateral sesamoidean or suspensory navicular ligaments. (Lig. sesamoideum collaterale ulnare, radiale.)	S
	(b) Postero-Lateral ligaments	McF
3.	(a) Collateral sulci of the frog (SULCI PARACUNEATI)	S
	(b) Cruro-parietal grooves	Bxxx
	(c) Lateral lacunae of the frog	McF
4.	(a) Corium of the frog (CORIUM CUNEATUM)	S
	(b) Cuneate matrix	B
	(c) Sensitive frog	McF
5.	(a) Deep flexor tendon	S
	(b) Flexor perforans tendon	McF
6.	(a) Digital cushion (TORUS DIGITALIS)	S
	(b) Digital Torus	B
	(c) Plantar cushion	McF

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7.	(a) Digital Sheath (VAGINA DIGITALIS)	
	(b) Synovial sheath of the flexor tendons	B
	(c) Metacarpo-phalangeal sheath	McF
8.	(a) Distal interphalangeal articulation (ARTICULATIO INTERPHALANGEA DISTALIS)	S
	(b) Coffin joint	
	(c) Pedal joint	
9.	(a) Distal sesamoid bone (OS SESAMOIDEUM PHALANGIS TERTIAE)	S
	(b) Sesamoid bone of the third phalanx	B
	(c) Navicular bone	McF
10.	(a) Navicular bursa (BURSA PODOTROCHLEARIS)	S
	(b) Synovial sheath of the deep flexor tendon	B
	(c) Navicular or small sesamoid sheath	McF
11.	(a) Phalango-sesamoidean ligament .. .. Distal navicular ligament (LIG. PHALANGEO-SESAMOIDEUM	S
	(b) Interosseous ligament	McF
12.	(a) Proximal sesamoid bones (OSSA SESAMOIDEA PHALANGIS PRIMAE)	S
	(b) Sesamoid bones of the first phalanx	B
	(c) Sesamoid bones	McF
13.	(a) Third Phalanx (PHALANX TERTIA)	S
	(b) " Os pedis " or " coffin bone "	S

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Clinical Articles

Hydrotherapy in Hyperpyrexia.

By DAVID ERIC WILKINSON, M.R.C.V.S.

DURING the short spell of hot weather in July, 1927, I was asked to attend a Shire gelding reported to be " off his feed."

He was one of a small stud of horses belonging to a coal merchant who is an excellent horse-keeper and was, in common with the rest of the stud in very good working condition.

I found his skin cold and dry, mouth and tongue dry and hot, bowels and kidneys torpid and anorexia complete, as he even declined to drink water. The temperature was 108° F., at which point it remained stationary for four days. During the whole of that time the horse never ate a particle of food nor did he drink any water.

When water was offered to him he merely put his muzzle in it and splashed it about.

The treatment consisted of the administration of one drachm of calomel twice daily, with frequent and vigorous grooming, and the dissolving in the drinking water of artificial Carlsbad salts. As the animal never drank anything this was of course wasted. On the morning of the second day, as all glandular secretions appeared to be in abeyance a hypodermic injection of arecoline compound was given, with very little result. There was some slight salivation, and a few pellets of fæces, covered with mucus were passed but the patient's general condition remained the same. An attempt was made to administer a few doses of liq. ammoniæ acetatis and spts. ætheris nit. as drenches but had to be abandoned as the animal was dangerous to drench.

I therefore made up some balls containing sodii salicylas of which I prescribed four drachms night and morning without having any effect on the temperature.

Having seen a similar case die of super-purgation after the administration of an aloetic physic ball, many years ago, I hesitated to adopt any drastic measures although the icteric condition of the visible mucous membranes began to call for some vigorous bowel and liver stimulant.

On the evening of the fourth day of treatment I took the stomach pump and tube, and injected three gallons of water from the tank in the stable yard (which had been well aerated and warmed by the sun) by the nasal route, dissolving in this 84 grains of Dimol as an intestinal antiseptic.

On the following morning the temperature had fallen to 102.5°, the horse had eaten a hot mash, his bowels had acted, evacuating a large soft mass of fæces resembling a cow's, and his general condition had greatly improved. The skin was warm and the mouth moist and clean. In the evening the temperature had fallen another degree, and from that time his progress was uninterrupted and no further treatment was adopted.

I am quite unable to account for the symptoms. This was an apparently healthy horse, which had been in the stud for five years and had given no trouble. He had been in regular daily work and there was no sickness amongst the other horses.

A Case of Poisoning by Water Dropwort in Cattle.

By F. BOOTH, M.R.C.V.S.,
Old Colwyn.

CALLED on July 2nd, 1929, to see 5 cows at a dairy farm near Colwyn Bay, at 8 p.m. My son attended and found the 5 cows looking very depressed, purging freely, off food, extremities cold, temperatures

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varied from 102 F. to 105 F., pulse frequent and thready, all seemed to suffer from abdominal pain and grunted.

The history given by the owner was that he noticed the cows running about in the field, some were very excited and wild, the weather was very hot at the time and he put their condition down to the heat, they were all driven to the buildings, where there was some shelter. At milking time in the afternoon 5 of the cows were off their milk, trembling and in obvious pain, they were kept in and as they went worse, began to purge, etc., we were sent for.

Diagnosis, vegetable poison was suspected, but owner was unable to give any help in the matter, he said that the pastures were very bare owing to the drought and nothing of a poisonous nature, that he knew of, grew within the cows' reach.

Treatment, each cow was given a saline purge.

July 3rd, at 9 a.m., two of the cows were trembling at the flanks, bodies cold, temperatures 105 F., the other three seemed easier, temperatures 102 to 103 F., extremities cold, all were dull and off food and drink, no milk, they moved with difficulty and appeared to be partially paralysed, ext. nux. vom. and ammonia given.

At 7 p.m. four were down and would not get up, two of them, the ones with trembling flanks in the morning, were nearly comatose, two other cows had become affected by now and they were given a purge, the cows that were down were given a hypodermic injection of strychnine and the one that was up another dose of ext. nux. vom. and ammonia.

The owner was asked to look over the ground well to see if he could find any poisonous plant.

July 4th, seven cows in much the same condition as yesterday, but two of those that were down last night were able to get up, their bodies were warm and they looked brighter, the two that remained down were comatose, bodies cold and temperature per rectum sub normal, the five that were up took no food or drink and they were all very dull. The nux. vom. and ammonia were continued to those standing and the other two were given strychnine hyperdermically.

The owner was asked if he had found any poisonous plant in the pastures and he said no, so we went with him over the ground and found that the cows had broken over into a marshy coppice in which a good crop of water dropwort (Eanthe fistulosa) grew, the cows had eaten a large quantity of the flowering tops and leaves and a lot had been pulled up by the roots, but none of the roots seemed to have been eaten.

This explained all the symptoms, but I had never seen a case of poisoning from eating the flowering tops and leaves before although I

had previously seen lambs and cattle poisoned from eating the roots.

July 5th, one of the cows down yesterday found dead and the other cold and worse in every way, the other five much better, three taking a little food and drink, treatment continued.

Post-mortem on dead cow revealed all stomachs practically empty and very much inflamed, small bowel slightly inflamed.

July 6th, the other cow that was down yesterday was dead and *post-mortem* was same as other cow but more marked. The other five improving nicely and from this day on they improved gradually until completely recovered.

A noticeable feature was that before a cow went down her body became very cold and her flanks trembled, when down they were partially comatose and those that died became quite comatose and never recovered. In those cows that recovered improvement started as soon as their bodies got warm and they continued to improve so long as they could be kept warm, but the body temperature went up and down intermittently and in the case of the two that died we were never able to get them warm.

A Case of Tuberculosis in the Horse.

By J. McCUNN, M.R.C.V.S., M.R.C.S., L.R.C.P.,
Professor in the Royal Veterinary College, London.

The following is a case which, on account of its course, I think worthy of a record.

The patient was a six years old cart mare, bred and born on the farm where she died, owned only by one man. All her working life she was worked by the same individual. On Sunday, 15th of April, I was asked to look at this mare. She had been on and off her food for about a month or six weeks. She had lost flesh and it was surmised that her teeth were causing the trouble.

The mare, when seen, had been turned out for the week-end. She was in the field with the others and was grazing. She looked bright and apparently healthy. Her coat was in good order and I naturally thought that the owner's suspicions *re* her teeth were well founded. Examination of the mouth revealed sharp edges on the teeth and nothing else. They were rasped. On handling the mare it was noticed that she felt hot, and on taking her temperature I was surprised to find that it was 105.5 Her respirations were normal in rate and type, but on auscultation moist sounds were heard along the sturnal region. The mare was housed, mustard applied and the usual feluluge mixtures

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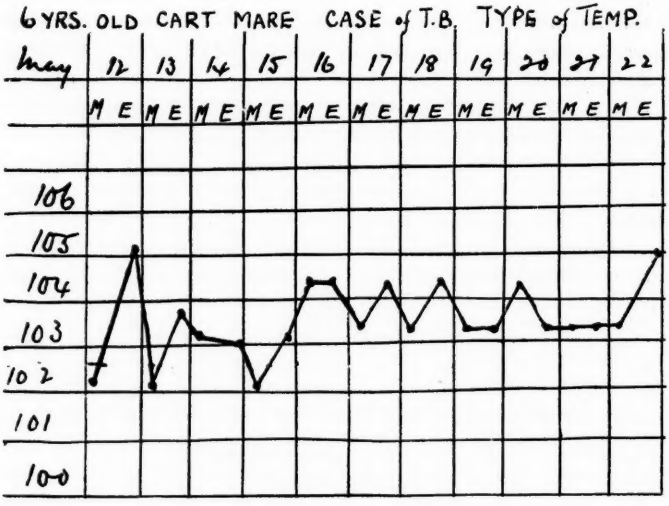
given. In two days the mare was feeding fairly well, the temperature had fallen to 102.5 and the case looked like clearing up.

A few days later the owner reported that the temperature had again gone up to 105 and that there was fairly profuse diarrhœa. From now until death the temperature rose and fell, and there was intermittent diarrhœa.


6 YRS. OLD CART MARE CASE of T.B. TYPE of TEMP.
May 12 13 14 15 16 17 18 19 20 21 22
M E M E M E M E M E M E M E M E M E M E M E
106
105
104
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102
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At various periods during the course of the illness the mucous membranes showed a slight dirty yellow colour, they were never deeply injected as one would have expected considering the temperatures that were shown. The skin was flushed and moist most of the time. Urine was voided frequently and in great quantities, the straw of the box being continually saturated. There was no stiffness apparent either in the neck or limbs and she took her rest well. Tubercle or some septic condition was suspected but no test was applied on account of the high temperatures that were run. The animal died on May 27th.

On *post-mortem* examination the liver was found to be a mass of tubercles. It would have been difficult to lay half-a-crown on the liver without touching a tubercle. They varied in size between that of a small orange and a pea.

The substance of the liver was also filled with them. The spleen showed nodules some two or three being the size of a large orange. There were lesions in both pulmonary apical lobes with abscess formation. The bronchial, mesenteric, aortic, and iliac, glands were affected. The neck bones were apparently clear but the bodies of the

thoracic and lumbar vertebræ showed great enlargement with erosion and anchylosis.

As far as we could ascertain there had not been a previous case in a horse on the farm. The animal had never had cow's milk as a food. A herd of cows was kept on the farm. Could this case have been one of infection from contaminated pasture or direct infection ?

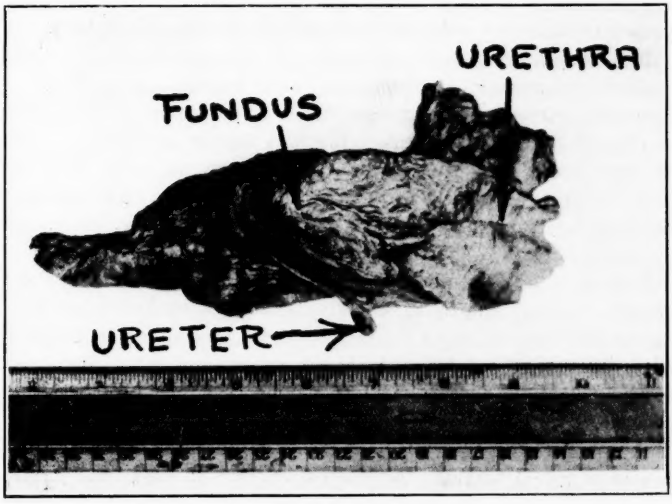
An Abnormal Urinary Bladder.

By R. J. FOREMAN, M.R.C.V.S.,
Tottenham.

SUBJECT was a three-quarter legged cart horse.

HISTORY.—Had been at work in a firm for about nine years. It had never been ill. There had been no trouble with its water.

I was called in to see this animal as it was off its food. The usual measures were taken. It developed an acute muco enteritis and death



took place four days after my first visit. The animal did not pass urine during its few days of illness, but I was able to elicit that small quantities of urine pus like in appearance had been passed for about a fortnight before death.

Post-mortem showed acute muco-enteritis. The heart and lungs were normal. The bladder was difficult to find. It was very small.

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Its mucous membrane appeared to be normal. Its fluid contents were negligible. The left kidney was normal in size and showed some degree of pyelonephritis. The right kidney was not quite of normal size and it was also affected with pyelonephritis.

The case is interesting in that the horse could exist apparently normally with such a small urinary bladder.

I am indebted to Mr. J. W. H. Holmes, D.V.S.M., of the Royal Veterinary College, for the admirable illustration.

Translations

A Case of Chronic Metritis with Pyometra; Incision of the Neck of the Uterus and Fatal Hæmorrhage.*

By VETERINARY COMMANDANT DARROU.

THE cure of chronic metritis where the uterine neck is closed and pyometra exists is considered doubtful by the classic authors. In bovines Moussu advises "sacrifice the subject or leave it to the defensive resources of its organism." In the mare the malady is quite rare. Among the remounts we had an old mare suffering from the chronic form of the disease. She was bought at eight years old and was called "Follette," and nothing was known of her previous gestations and the sequelæ of them. But her career as a brood mare had been interrupted by an accident producing sterility and so she was sold.

On arrival on December 1st, 1925, she was in bad condition and feverish, and not improving, came into hospital on December 30th. The genital organs being examined, there was slight leucorrhœa, vulva just soiled, at intervals bad smelling discharges, but most marked polakiuria characterised by expulsive efforts without result. Rectal exploration showed a very large and distended uterus up to the horns, giving a very plain sensation of fluctuation analogous to that of a gravid uterus. Vaginal exploration showed total closure of the uterine neck, the finger penetrating only one centimetre and beyond complete atresia.

Attempts to pass sounds or cannulas on January 20th were unsuccessful and we came to the conclusion that we had a chronic metritis to deal with and pyometra due to closure of the neck of the uterus and a cavity cultivating deleterious microbes.

* Bulletin de l'Académie Vétérinaire, *de France*.

There was now noticed marked emaciation and alopecia in different parts of the body, but appetite remained almost normal. On March 17th we decided to operate and used a bistouri wrapped at its base with cotton, no ovariotome with a hidden blade being available. The incision was made into the expansion of the neck of the uterus, but there was no fixing of the point of incision and no precise direction, owing to the hand only being used. No pus escaped after the incision, showing that the uterus had not been punctured. In 40 minutes the mare fell and died from internal hæmorrhage. Autopsy showed that the incision had been made below the neck and had severed collateral branches of the vaginal artery. On opening the abdominal cavity the uterus showed a greenish tint and on incision a purulent greyish yellow liquid escaped, with a putrid odour and containing mucous filaments. About five litres or a gallon of fluid came away. The uterine mucosa was thickened, ulcerated and showed chronic maceration. These lesions involved the epithelium and glandular tissue which had a downy aspect as a result of hypertrophy. The neck at the uterine side had a very tiny opening which went in an angular direction, hence the difficulty of penetrating the os and the almost total absence of leucorrhœa and just below this opening we found the incision made by the bistoury. Intervention was necessary, the mare was useless, but our technical chiefs judged the intervention as unfortunate and involving a fault in operation. The hæmorrhage was a surprise to us and we did not think that the vascularisation of this region would involve such a hæmorrhage.

It was then that we made an appeal to Professor Bourdelle, who gives the following on the circulation of this region.

The circulation of the uterine neck is bounded on each side by the uterine and vaginal artery and chiefly by this latter in the mare at any rate; the terminal branches of these arteries anastomosing not exactly at the level of the neck, but on the body of the uterus. These branches form in every case a system of a plexuous nature, situated in a lateral position, but thrown out a little above and below. The two lateral systems anastomose above and below by transverse branches of smaller dimensions. This system remains quite superficial at the level of the os "which finds itself thus surrounded by vessels when the body of it is penetrated" (Farabeuf). It only hinders numerous divisions of reduced calibre from penetrating the thickness of the muscularis and mucosa of the neck. And Bourdelle concludes that incision of the neck remains as the classic veterinary obstetricians (Violet and St. Cyr, Bournay and Robin) remark concerning vaginal hysterectomy, a bloody operation. St. Cyr estimates 30 per cent. of fatalities.

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The surgeons have debated and discussed much about the number, the position, the depth of the incisions to make and M. Bourdelle states that if one attempts the operation one should practise multiple superficial incisions and try to give most importance to superior and inferior median incisions.

En résumé in the case under discussion, the impossibility of catheterism, the complete atresia of the os justified the only possible surgical intervention. The point of the incision at one centimetre below the cicatricial centre of the neck of the uterus was quite one of least danger from a blood supply point of view. There was therefore no operatory fault. Employed as an ultimate resource and only in cases where dilation is impossible this operation may perhaps be tried.

M. Cocu suggested that an electrifiable olive on an isolated handle and bound to a negative pole with a continuous current of 10 to 15 milliamperes would appear to be an effective method of operating without danger.

M. Moussu, commenting on this case, says he would have preferred a sterilised trocar and inserted it following the normal direction of the cervical canal.

Some Attempts to Obtain, by Means of Physiological Experiments, an Objective Basis for an Opinion as to the Cruelty Alleged to be Attendant on the Jewish Ritual Method of Slaughtering Cattle.*

By PROFESSOR A. V. SAHLSTEDT.
Principal of the Veterinary Institute, Stockholm.

THE general interest attached to the ritual method of slaughtering cattle employed by the Jews (schechita)—an account of its supposed cruelty—has led to lively discussions, where, on the one side physiological points of view were emphasised, and, on the other, laymen's supersensitive sympathy for animals became apparent. As, of course, the subjective reaction to pain on the part of animals has hitherto been and, probably, always will, remain hidden from our judgment, we have been obliged, in the discussions respecting various methods of slaughtering cattle—as far as the question of protecting the animals from unnecessary cruelty was concerned—to investigate the testimony borne by our observation of certain physiological

* Abstract from 3 Nordiske, Veterindermote, Oslo, 11, Juli, 1928.

phenomena, the blood pressure, the movements of the animals, etc. By these means, and by comparison with corresponding conditions in the case of human beings, endeavours have been made to draw deductions respecting the presence or absence of consciousness, i.e. the condition of conscious sensation of pain in the animals slaughtered. To be able to contribute to such objectively determinable facts as might serve as guides to our judgment in such cases, the writer has carried out certain experiments on cows in connection with the Jewish methods of slaughtering. These experiments form a part of the investigation made by the Professors' College of the Veterinary Institute in Stockholm on account of a proposal for a Slaughtering Bill placed before the Swedish Parliament in 1925.

(1) By measuring the area of the vessels which convey blood to the brain it has been found that the amount of blood, which via art. vertebrales is normally carried to the brain, amounts to 1/5 to 1/6 of the total blood supply to that organ.

(2) By experiments with a " Stromuhr " placed in one of the art. vertebralis it has been found that the amount of blood passing through these arteries during the course of the first 20 seconds after the " schechita " cut has been made falls to about 1/6 of the amount which passed before, so that the total supply of blood to the brain should, in the same time, fall to 1/30 to 1/40 of the normal amount.

(3) By collecting and measuring the blood which escaped from the large vessels of the neck after the cut, at periods of half or one minute in duration, it has been found that the bleeding, under normal circumstances, is so rapid that, after half a minute, 33 per cent.; after one minute, 50 per cent.; after one and a half minute, 63 per cent; after two minutes, 70 per cent.; after three minutes, 83 per cent.; after four minutes, 90 per cent.; and, after five minutes, 95 per cent.; of the total amount of the blood which runs away, has been carried off.

(4) A blood-pressure experiment, carried out with the venous blood in sin. sagittalis of a cow, gave, after the cut, a slow lowering down to 0, which lasted about six and a half minutes. The seeming want of agreement between this experiment on one side, and on the others the writer's bleeding experiments and test respecting the speed of the blood-current in art. vertebrales, and some experiments respecting the arterial blood pressure and the intracranial pressure, carried out by Lieben, may probably be explained as resulting from local vaso-motor effects.

On comparing the results obtained by the writer's own tests and by Lieben's, the writer has arrived at the conclusion that, in normal procedure, the Jewish method of slaughtering is probably rapidly

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followed by loss of consciousness, and that, consequently, this method cannot be said to be attended by "cruelty" to the cattle. But, in consequence of the disposition of cows' blood to coagulate rapidly, there can ensue, after the cut, and that rather quickly, a closing of the large blood vessels of the neck, so that one ought to take into account the possibility that, during the first few minutes after the cut, the blood pressure may be maintained at such a level that the brain will still receive the amount of blood necessary for consciousness. If in a possible future Slaughtering Bill an exception be made in favour of the Jewish method, excusing those employing it from rendering cattle unconscious by means of shooting or stunning on the forehead before bleeding, then the writer considers it best, as a protective measure against needless suffering on the part of the cattle, that the regulation should be added to the Act that this latter procedure must be carried out immediately after cutting, as a guarantee that the slaughtered cattle have, after all, been killed as painlessly as possible.

An Enzygotic Twin.

By G. NAIR, G.B.V.C.,
Veterinary College, Calcutta.

THE photograph shown in this article illustrates a hill she-buffalo of about 8 years, and her fourth offspring, which she gave birth to during the calving season of 1929 of this country, and her owner supporting this curious monster with his right hand. Unaided though the parturition was, yet no untoward result occurred excepting the slight post-partum hæmorrhage, and the partial unconsciousness about a couple of hours. A dose of rum was then administered to her after which she recovered consciousness and began to lick her strange calf. That was all the medication it had. She is quite healthy and gives about 14 seers of milk even now.

The External View.

The monster had a pair of separate heads with all the sensory organs, two distinct well defined necks, behind each of which a pair of forelimbs, one hindlimb and a tail for each part of the body on one side; on the upper part of the body above the tails it had a common hindlimb—the sickle-shaped limb which caused obstruction and hæmorrhage at the time of delivery—and just below the two tails a single anal opening, lower down the anus an ill-defined vaginal opening with a minute hole through which urine dribbled in the act of micturition.

History of its Short Life.

It made repeated attempts in vain to rise. The limbs never worked in harmony in spite of its united body; and even if it were made to stand up it could not maintain that position unsupported because of its disarranged location of the limbs. It never fed from the mother and hence was spoon-fed on milk through both the mouths. On the third day it refused feed and showed marked straining to

defæcate but all its efforts were in vain. Late in the evening it was found slightly blown up and in distress. Before it could get any professional aid it died part by part and ended its short life of three days. That part of the monster near to the forelimb of the mother—as shown in the illustration—was the one which was born first and it was the same one which expired first.

Internal Appearance.

There were two well-defined thoracic cavities containing heart, lung, etc. The abdominal cavity was more or less one though it contained all the viscera of two separate animals with the only difference that one set of organs was not so developed as the other. The remarkable anatomical features were to be found in the pelvis which itself was very peculiar. Though there was only one developed pelvic cavity

there was another one which was fused with the former or rather adhering to it on one side. As I was not able to examine the skeleton the osteological peculiarities still remain dark to me. The generative system was completely undeveloped. The terminal part of the floating colons of the two intestines opened into the single rectum by a very narrow opening where there was fæcal obstruction.

Discussion.

This fæcal obstruction, together with the over-feeding and over nursing might be the probable cause of its early death. If there was any timely veterinary assistance probably the life of this queer buffalo-calf could have been saved or at least prolonged for a few days.

In human embryology a variety of monochorionic fœtuses are described out of which the most interesting is Omphaloangiopagus twins which are united only be means of vessels of the umbilical chords in the single plascenta. Another thing worth noting about such beings are that both twins are generally of the same sex and one of which will be of normal structure and the other is of a deformed nature. Very seldom do we come across a monochorionic twin in lower animals. If similar terms can be applied to lower animals the subject of this article, I should say is an Enzygotic Twin, i.e. twin developed from the same fertilised ovum. The explanation for this kind of enzygotic twin would appear to be that the ovum might have given access to a pair of spermatozoa instead of a single one.

In this connection it would be worth while to note what authorities on the subject say about this kind of abnormality :—

Ballantyne in his Antenatal Pathology and Hygiene says that uni-ovular twins may be perhaps due to the presence of two germinal vesicles present in a single ovum or to the penetration of an ovum by a pair of spermatozoa.

The interesting point about this freak is centered round the unequal development of the body and the peculiarities noted in the pelvis.

In the embryonic life the relative values of differences in fœtal position are worth studying. The Teratogenesis of Enzygotic Twins is open to canons of criticism in how much the twinship is responsible for allowing the deformed development of the fœtus or how much the deformity is due to twinship. At any rate it is interesting to note its short existence of three days in the external world in lieu of the antenatal death common to such enzygotic twins.

Personal

Mr. R. B. H. Murray, M.R.C.V.S., D.V.S.M., has been appointed a Veterinary Officer in Uganda.

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